WHAT IS CLAIMED IS:

A method for estimating indicated toque in an engine comprising:

estimating in-cylinder combustion pressure; and

calculating indicated torque based on the estimated in-cylinder combustion pressure and engine geometry.

- 2. The method of claim 1 wherein estimating in-cylinder combustion pressure comprises estimating in-cylinder combustion pressure using an estimation model function.
- 3. The method of claim 2 wherein said estimation model function is a first order non-linear model comprising measured values of crankshaft position, speed, and acceleration.
- 4. The method of claim 3 comprising a stochastic estimation method to build cross-correlation functions between said in-cylinder pressure and measured values of crankshaft position, speed, and acceleration.
- 5. A method for estimating indicated toque in an engine comprising:
 estimating individual in-cylinder torque for each cylinder in said engine; and
 calculating summations of said individual cylinder torques.
- 6. The method of claim 5 wherein estimating individual in-cylinder torque for each cylinder comprises estimating individual in-cylinder torque using an estimation model function.
- 7. The method of claim 6 wherein estimating in-cylinder torque for each cylinder comprises estimating individual in-cylinder torque using an estimation model function.

- 1 (8. The method of claim 7 wherein said estimation model function is a first order nonlinear model comprising measured values of crankshaft dynamics.
 - 9. A method for estimating indicated toque in an engine comprising:

 directly estimating the summation of individual cylinder torques.
 - A method for estimating indicated toque in an engine comprising:

 performing crankshaft speed deconvolution using discrete Fourier Transfer;

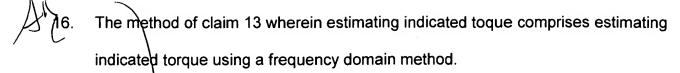
 determining a frequency response function for said crankshaft speed

 deconvolution; and

evaluating indicated torque in the frequency domain.

- 11. The method of claim 10 wherein crankshaft speeds are determined using a SISO model.
- 12. The method of claim 11 wherein the indicated torque is an input to the SISO model, and the crankshaft speed is an output from the SISO model.
- 13. A method of controlling an engine comprising;
 estimating indicated toque in said engine; and
 controlling said engine in response to said estimated indicated torque.
- 14. The method of claim 13 wherein estimating indicated toque comprises estimating indicated toque using a stochastic method.
- 15. The method of claim 14 wherein estimating indicated toque using a stochastic method comprises:

estimating in-cylinder combustion pressure; and calculating indicated torque based on the estimated in-cylinder combustion pressure and engine geometry.



17. The method of claim 16 wherein estimating indicated torque using a frequency domain method comprises:

performing crankshaft speed deconvolution using discrete Fourier Transfer;

determining a frequency response function for said crankshaft speed

deconvolution; and

evaluating indicated torque in the frequency domain.

- 18. The method of claim 13 wherein estimating torque in said engine comprises using an estimation model function.
- 19. A torque estimator for an engine, said torque estimator adapted to estimate in cylinder combustion pressure and calculate indicated torque based on the estimated in-cylinder combustion pressure and engine geometry.
- 20. A torque estimator for an engine, said torque estimator adapted to perform crankshaft speed deconvolution using discrete Fourier Transfer, determine a frequency response function for said crankshaft speed deconvolution, and evaluate indicated torque in the frequency domain.